



Section 1 - Bridge Superstructure PC/Pretensioned I Girder (Debonded Strands)

XS Sheet Numbers:

XS 1-120-1

Description of Component:

Precast Pretensioned I-Girder with Debonded Strands

Standard Drawing Features:

1) Elevation:

- Girder Length “L” needs to be provided. If different girder lengths are used, fill out the table.
- Shear stirrups spacing shall be provided and #5 stirrups are preferred. Three types of stirrup shapes are allowed.
- Debonded length shall be provided in the table.
- Number of Intermediate diaphragms should be designed based on MTD 11-8 and detailed accordingly.
- Special details shall be provided if girder ends are not level.

2) Typical Girder Section:

- Girder Depth “D” shall be provided and may be shown in the table.
- The spacing for bottom confinement reinforcement is the same as the stirrup spacing but not less than 6 inch per design code.

3) Section A-A:

- The stirrups for splitting resistance should be verified based on AASHTO LRFD 5.9.4.4 (8th Edition) - Pretensioned Anchorage Zones. Other standard confinement details are provided. End blocks are normally not needed unless the design requires them.

4) Strand Template & Debonding Pattern:

- The designer is responsible for designing numbers of total strands and debonded strands. Show numbers of total strands and debonded strands and debonded strand lengths in the tables. Std. Specs 50-1.03B(3)(b) applies.
- Since different manufacturers may have different I-girder strand templates, deviation from the template shown is allowed. The designer needs to verify the design of the deviated strand pattern before approving shop plans.

5) Girder Table:

- The table shall be used for specifying girder length, girder depth, number of 0.6-inch diameter strands, jacking force, concrete strengths, mid-span deflections due to deck dead load, and mid-span deflections due to composite section load, such as barrier railing. If different girders exist, Girder A, B, C, symbols may be used to identify each of them. In some cases, especially for long-span girders, the required area of prestressing steel may be controlled by the strength limit state. If this is the case, the designer should consider using an initial jacking force less than 75% of f_{pu} in order to reduce the required initial concrete strength.



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6) Strand Extension Hook Detail for Continuity Diaphragm (At Bent):

- This detail has been added per the Caltrans EQ Committee's request and SDC 2.0. The designer shall determine the number of required strands to be hooked according to the requirements of seismic design of precast bridge systems.

Design/General Notes:

One design option is to add temporary top prestressing strands, which allows the concrete strength at release to be reduced.

Additional Drawings Needed to Complete PS&E:

This sheet works with XS 1-120-3

Contract Specifications:

Standard Specifications 2018

Restrictions on Use of Standard Drawings:

The project designer and project engineer are responsible for designing this sheet and stamping this sheet.

Special Considerations:

The project designer and project engineer may modify this sheet based on project needs. Caltrans designers are urged to consult with the Concrete Design Committee on any design change to the girder cross-section. Consultant designers may check with the precast industry (PCI West).